

OBJECTIVES

Shipboard Research:

1. Conduct the portion of the CCAMLR 2000 survey for Antarctic krill in the Scotia Sea that is assigned to the U.S. survey ship (R/V *Yuzhmorgeologiya*).
2. Conduct a high-resolution survey for krill in the vicinity of Cape Shirreff using a specially-equipped Zodiac for the inshore areas and the *Yuzhmorgeologiya* for the offshore areas.
3. Calibrate the shipboard acoustic system in Leigh Harbor, South Georgia near the beginning of Leg I, at Cape Shirreff near the beginning of Leg II, and again at Admiralty Bay near the end of Leg II.
4. Conduct a survey in the vicinity of the South Shetland Islands during Leg II to map meso-scale features of the dispersion of krill, water mass structure, and zooplankton constituents.
5. Collect continuous measurements of the research ship's position, sea surface temperature, salinity, turbidity, fluorescence, air temperature, barometric pressure, relative humidity, and wind speed and direction.
6. Provide logistical support to two land-based field sites: Cape Shirreff (Livingston Island), and Copacabana field camp (Admiralty Bay, King George Island).

Land-based Research:

Cape Shirreff

1. Estimate chinstrap and gentoo penguin breeding population size.
2. Band 1000 chinstrap and 200 gentoo penguin chicks for future demographic studies.
3. Record at sea foraging locations for chinstrap penguins during their chick-rearing period using ARGOS satellite-linked transmitters (PTTs).
4. Determine chinstrap and gentoo penguin breeding success.
5. Determine chinstrap and gentoo penguin chick weights at fledging.
6. Determine chinstrap and gentoo penguin diet composition, meal size, and krill length/frequency distributions via stomach lavage.
7. Determine chinstrap and gentoo penguin breeding chronologies.
8. Deploy time-depth recorders (TDRs) on chinstrap and gentoo penguins during chick rearing for diving studies.
9. Collect data on foraging locations (using PTTs) and foraging depths (using TDRs) of chinstrap penguins while concurrently collecting acoustically derived krill biomass and location data during the inshore survey.
10. Deploy PTTs on chinstrap penguins following adult molt to determine migration routes and winter foraging areas in the Scotia Sea region.
11. Document Antarctic fur seal pup production for Cape Shirreff and assist Chilean colleagues with censuses of fur seal pups for the entire Cape and the San Telmo Islands.